Some Considerations

Of Mr. Nic. Mercator, *concerning the Geometrick and direct Method of Signior* Cassini *for finding the Apogees, Excentricities, and Anomalies of the Planets; as* that *was printed in the* Journal des Scavans *of* Septemb. 2. 1669: *which Considerations are here delivered in the* Latine *Tongue, wherein they were written by the Author, as chiefly regarding the Learn'd in Astronomy*, viz.

Clarissimi Cassini *Methodus*

Investigandi Apogéa, Excentricitates & Anomalias Planetarum, breviter Exposita & Demonstrata.

Supponit Cl. *Cassinus*, ad Planetam in Ellipsi moventem extendi ab utroque foco duas rectas, quarum altera sit *medii*, altera autem *veri* motûs linea. Constructio porrò talis est;

Fig. II. L est Centrum Concentrici ABCDE.
BLD est Diameter.
BA, BC, BP, sunt intervalla apparentia.
DE, DF, DQ, sunt intervalla mediorum motuum.
BE, BF, BQ; item DA, DC, DP, sunt lineæ rectæ.
BE secat DA in H; BF secat DC in G; BQ secat DP in R.
RHG est linea recta.
BI est perpendicularis ad RHG.
I est Centrum Ellipseos.
LI est Excentricitas.
IO = LI.
O est focus, circa quem ordinatur medius motus; L, circa quem verus.
IM = IN = LB.
M est Apogéon; N, Perigeon; BLM Anomalia vera.

Demonstratio.

I. Illustrissimus ac Reverendiss. *Sethus Wardus*, quondam in Celeberr. Acad. *Oxon.* Professor Astronomiæ Savilianus, nunc Episcopus Sarisburiensis, in *Examine Astronomiæ Philolaicæ*, edito Oxon. A. 1653. c. 6. docuit Methodum, ex data Anomalia *media* Planetarum, investigandi *veram*; quæ est hujusmodi:

Fig. III. C, est Centrum Ellipseos AEP: F, focus, circa quem ordinatur medius motus. S, focus, circa quem ordinatur verus motus. A, Apogéon. P, Perigeon, E, Erro sive Planeta. AFE, Anomalia media. ASE, Anomalia vera. FET, linea recta, ET = SE. ST est linea recta.

In △o SFT dantur, 1. SF distantia focorum: 2. FT = FE + ES = AP. 3. AFT, angulus externus, sive Anomalia media, æqualis summæ angulorum FST & T. Ergo inveniri potest FSE, sive Anomalia vera, æqualis differentiæ Angulorum FST & T. Nimirum

Vt

Ut semi-summa laterum F T & F S, ad semi-differentiam eorundem;

Ita Tangens semi-summæ angulorum F S T & T, ad Tangentem semi-differentiæ eorundem.

Sed semi-summa laterum F T & F S invenitur, substituendo pro F T æqualem A P, cujus semis est A C, qui additus C S semissi ipsius F S, facit Semi-summam A S, distantiam Planetæ maximam.

Tum, si ex semi-summa A S auferatur latus minus F S, restat semi-differentia laterum F A, æqualis P S, distantiæ Planetæ minimæ; ut sit

Regula ex Anomalia *Media* data inveniendi *veram*:

Ut A S, distantia Planetæ maxima, ad P S, distantiam minimam;
Ita Tangens dimidiæ Anomaliæ mediæ, ad Tangentem dimidiæ Anomaliæ veræ.

Corollar. I. Si continuetur S E usque ad U, ita ut E U sit = ipsi F E, & tota S U = Axi A P; erit $\triangle^{i}$ F S U angulus U semis Prostaphæreseos F E S, ideóque æqualis semi-differentiæ angulorum Anomaliæ mediæ & veræ, h.e. ipsorum A F E & A S E; & externus A F U = semi-summæ eorundem A F E & A S E angulorum, ablata scil. semi-differentiâ U F E ex majori A F E. Unde oriuntur duæ Analogiæ:

1. Ut Sinus semi-summæ Anomaliæ mediæ & veræ A F U, ad Sinum semi-differentiæ eorundem, U; Ita S U (= axi transverso A P) ad S F, distantiam focorum.

2. Ut Sinus semi-summæ Anomaliæ mediæ & veræ, A F V, ad Sinum Anomaliæ veræ F S U; Ita S U (vel axis A P) ad F U, subtensam Anomaliæ veræ: Ita quoque semi-axis A C, ad semi-subtensam U X, vel F X.

Corollar. II. Si in eodem Triangulo F S U, ex subtensæ F U puncto medio X, erigatur perpendicularis X E; secabit illa S U in duas partes, quarum altera U E = est lineæ medii motûs F E, altera verò S E est ipsa linea veri motûs.

II. Fig. IV. Sit *a* Centrum Concentrici *c h f i*.

c a d, Diameter, eadémque linea Apsidum.

c h, Arcus Anomaliæ veræ, cui respondet

d i, Arcus Anomaliæ mediæ. Itaque

c d h, est Angulus dimidiæ Anomaliæ veræ, &

d c i, Angulus dimidiæ Anomaliæ mediæ.

c i & *d h* sunt lineæ rectæ, secantes se mutuò in *g*.

Ab Intersectionis puncto *g* demittatur ad *c d* perpendicularis *g b*. Erit igitur,

d b . b g : : Radius ad tang. *b d g* vel *c d h*.
Et *c b . b g* : : Rad. tang. *b c g* vel *d c i*.

Ergo

Ergo $db \times$ tang. $cdh = bg \times$ Rad. $= cb \times$ tang. dci.

Quare $db . cb :: $ tang. dci . tang. cdh; hoc est, db erit ad cb, ut tangens dimidiæ Anomaliæ mediæ ad tangentem dimidiæ Anomaliæ veræ, adeóque (per Regulam supra expositam) ut distantia Planetæ maxima, ad distantiam minimam. Quamobrem $db =$ erit distantiæ Planetæ maximæ, & cb, minimæ, & ab, excentricitati.

Cúmque idem eodem modo demonstretur de cæteris omnibus Intersectionum punctis, nimir. Perpendiculares ab ipsis ad cd lineam incidere in punctum b; oportet, ut recta, jungens ipsas Intersectiones, congruat perpendiculari bgf.

III. Ductâ diametro hak, fiat arcus $kl =$ arcui id, & ducantur kc & hl, secantes se mutuò in p. Ab h in bgf demittatur perpendicularis hr, eadémque parallela Apsidum lineæ cd; erit angulus rhs semi-differentia arcuum Anomaliæ veræ ch, & mediæ di. Tum ab eodem h puncto ducatur recta $h\beta$, faciens cum kh angulum $=$ angulo rhs, & occurrens lineæ Apsidum in β, Erit $\triangle^i$ $a\beta h$ angulus βah mensura arcûs ch, sive Anomaliæ veræ, & βha semi-differentia Anomaliæ veræ & mediæ (ex Constructione;) & externus $c\beta h$ (æqualis duobus internis & oppositis βah & βha, adeóque compositus ex Anomalia vera & semi-differentia ejus à media) erit semi-summa Anomaliæ veræ & mediæ. Ergo, per *Corollarii* I^mi^ Analogiam priorem; Vt Sinus $c\beta h$, ad Sinum βha; ita Radius ah, ad Excentricitatem $a\beta$. Sed supra demonstravimus quoque ab æqualem Excentricitati. Ergo punctum β congruit puncto b.

Tum ex b excitetur ipsi hb perpendicularis bt; Aio, hanc continuatam incidere in punctum Intersectionis p. Nam Triangula rhs & bht sunt similia, ex Constructione; quemadmodum & $\triangle^m$ hpk simile est $\triangle^o$ hgi, cum eidem peripheriæ ch insistentes anguli pkh & gih sint æquales, nec non æqualibus peripheriis kl & id insistentes anguli phk & ghi æquales; quare & tertius hpk æqualis est tertio hgi. Et ex æqualibus phk & ghi ablatis æqualibus bht & rhs, restant æquales phb & ghr. Vnde sic arguo: $srh = tbh$, & $rhs = bht$, Ergo $hsr = htb$; ergò & Complementa horum ad semi-circulum sunt æqualia, nimir. $rsi = btk$; & $sig = tkp$, Ergò & $igs = kpt$, quibus ablatis ex æqualibus igh, & kph, restat $hgs = hpt$; & $ghr = phb$, Ergo & $hrg = hbp$ Sed hrg est rectus, Ergò & hbp rectus est. Cùm verò & hbt rectus sit ex Constructione, erit tb in directum ipsi bp. Cúmque idem eodem modo demonstretur de quavis alia Intersectione linearum ab h & k ad congruentia Anomaliæ veræ & mediæ puncta ductarum; patet, non modò rectam, jungentem intersectiones, transituram per b punctum; sed & hb, lineam perpendicularem fore ad eandem Jungentem. *q. e. dem.*

Corol-

Corollarium. Si à quovis puncto Anomaliæ veræ, puta *h*, ad respondens punctum Anomaliæ mediæ *i* ducatur recta *hi*; excitata è Centro Excentrici *b*, ipsi *cbd* perpendicularis *bf* secabit ipsam *hi* in *s* eâ ratione, quam linea *medii* motûs obtinet ad lineam *veri* motûs.

Nam per *Corollarii* I^mi Analogiam posteriorem, *hb* est semi-subtensa; Ergò per *Corollarium* II^um, perpendicularis erecta ex *b*, nimir. *bt*, secat diametrum *hk* in *t* eâ ratione, quam linea medii motûs obtinet ad lineam veri motûs. Ergò & *rs* (sive *bf*) secat *hi* lineam eadem ratione in *s*; propter demonstratam modò figurarum *tbhkphb* & *srhighr* similitudinem.

Cæterùm ex laudata superius Reverendiss. *Wardi* Methodo inveniendi primam inæqualitatem, non est difficile, alium adhuc modum investigandi Apogéa & Excentricitates, non minùs directum & Geometricum, & Observationes *quotvis* admittentem, producere; quem & paucis exponam. Plures modos invenient Astrophili in Reverendiss. Viri *Astronomia Geometrica*, edita *A.* 1656, ad quam eos remitto. Interim

Fig. V. Sint *l* & *d* duo foci Ellipseos; *t* & *u* duo puncta *veri* motûs Planetæ; arcus Ellipseos *tu* ex *l* spectatus sub angulo *tlu*, & ex *d*, sub angulo *tdu*; item distantia focorum *ld* ex *t* spectatus sub angulo *dtl*, & ex *u*, sub angulo *dul*: Aio, differentiam angulorum *tlu*, *tdu*, æqualem esse differentiæ angulorum *dtl* & *dul*.

Cùm enim trianguli *lux* tres anguli simul sumpti æquales sint trianguli *dtx* tribus angulis simul sumptis; si auferantur utrinque æquales *lxu* & *dxt*, reliquorum duorum summa *ulx* + *lux* erit = summæ reliquorum *tdx* + *dtx*, & ab his æqualibus summis si auferantur inæquales, v. g. *ulx* ex priori, & *tdx* ex posteriori; reliquorum, *lux* & *dtx*, differentia = est differentiæ ablatorum *ulx* & *tdx*; quod erat propositum.

Centro *l*, intervallo axis transversi *mn*, describatur Circulus *abc*, cujus arcus *ab* rursus ex *l* spectatur sub angulo *alb*, & ex *d*, sub angulo *adb*; item distantia focorum *ld* ex *a* spectatur sub angulo *lad*, & ex *b*, sub angulo *lbd* Ergò rursus differentia angulorum *alb* & *adb* = est differentiæ angulorum *lad* & *lbd*. Sed per *Coroll. I.* angulus *lad* semis est anguli *lud*, & angulus *lbd* semis anguli *ltd*. Ergò horum angulorum *lad* & *lbd* differentia = est semi-differentiæ angulornm *lud* & *ltd*; ergò & angulorum *alb* & *adb* differentia = est semi-differentiæ angulorum *ult* & *udt*, quorum prior est intervallum apparens duarum Observationum, posterior autem, intervallum motûs medii. Datâ igitur horum intervallorum differentiâ, datur quoque hujus (*differentiæ*) semis, nimir. differentia angulorum *alb* & *adb*. Sed *alb* idem est cum *ult* dato; Ergo datur quoque *adb* angulus, sub quo peripheria *ab* spectatur ex *d*.

D Simili

Simili modo ostendetur, differentiam angulorum *t l y* & *t d y* æqualem esse summæ angulorum *l t d* & *l y d*; nec non differentiam angulorum *b l c* & *b d c* = esse summæ angulorum *l b d* & *l c d*. Cùmque *l b d* semis sit ipsius *l t d*, & *l c d* semis ipsius *l y d*; erit sanè summa ipsorum *l b d* & *l c d* = semi-summæ angulorum *l t d* & *l y d*, hoc est, differentia angulorum *b l c* & *b d c* = erit semi-differentiæ angulorum *t l y* & *t d y*, quorum prior est intervallum apparens duarum Observationum, posterior autem, intervallum motûs medii. Quare, datâ horum intervallorum differentiâ, datur quoque hujus semis, nimir. differentia angulorum *b l c* & *b d c*. Sed *b l c* idem est cum *t l y* dato; Ergò datur quoque *b d c* angulus, sub quo peripheria *b c* spectatur ex *d*.

Unde liquet, ex datis intervallis Observationum mediis & apparentibus, dari angulos, sub quibus ex *d* spectantur Circuli *a b c* peripheriæ quotvis, interceptæ à lineis veri motûs. Ergò, per *Herigoni Theor. Plan.* l. 1. c. 3. Prop. 12. *Schol.* 1. totidem Circuli segmenta describi possunt, capacia angulorum, sub quibus isti arcus conspiciuntur ex *d*, quæ segmenta omnia se mutuò intersecabunt in *d*. Possunt igitur & hac Methodo inveniri Apogéa & Excentricitates Planetarum, delineatione Geometricâ, adhibitis Observationibus *quotvis*; nec difficilius est, Circulos ducere, quàm lineas rectas.

Sed ut demus id, quod verum est, Clarissimi *Cassini* delinationem Geometricam non-nihil expeditiorem esse; verendum est interim, ne, si ἀκρίβειαν Astronomis expetitam sectemur, Diagrammata requirat enormis magnitudinis, adeóque operosior evadat, quàm ipse Calculus. Ad hunc autem accedentes, utramque Methodum æquipollere deprehendemus.

Adhibeamus enim ex Observationibus *Tychonicis* tres, quæ Dom. *Cassini* Diagrammati quodammodo consentiant; nim. Observationem A, cùm *An.* 1604, *Mart.* 28 *d.* 16 *h.* 23 *m.* *Mars* observatus fuit in ♎ 18 *g.* 37 *m.* 10 *s.* B, cum *An.* 1587, *Mart.* 6 *d.* 7 *h.* 23 *m.* idem Planeta visus fuit in ♍ 20 *g.* 43 *m.* 0 *s.* Denique C, cùm *An.* 1600 *Jan.* 18 *d.* 14 *h.* 2 *m.* deprehenderetur in ♌ 8 *g.* 38 *m.* 0 *s.* Est igitur inter A & B intervallum apparens 22 *g.* 54 *m.* 10 *s.* & huic respondens medium 25 *g.* 58 *m.* 40 *s*; at inter B & C intervallum apparens 47 *g.* 5 *m.* 0 *s.* & medium 56 *g.* 21 *m.* 57 *s.* Itaque

Methodo

Methodo Cassini, Fig. *II*.

1. In Triangulo D B H,

Dantur	D B	10, 00000
	D B H	12 |99
	B D H	11 |45
Quæritur	B H	9, 68106

2. In Triangulo DBG.

Dantur	D B	10, 00000
	D B G	28 |18
	B D G	23 |54
Quær.	B G	9, 70653

3. In Triangulo HBG.

Dantur	B H	9, 68106
	B G	9, 70653
	H B G	41 |17
Quær.	B G H	64 |95
Cujus Compl.	GBI	25 |05
Si auferas ex	GBD	28 |18
Restat	IBD vel IBL	3 |13

4. In Triangulo G B I.

Dantur	B G	9, 70653
	G I B	90
	G B I	25 |05
Quær.	B I	9, 66363

5. In Triangulo I B L.

Dantur B I	9, 66363
BL (semis τȣ̃ BD)	9, 69897
IBL	3 |13

Quær. BLI 32 |31, An. vera, & L I, 8, 67284, Excentricitas.

Methodo Herigoni, Fig. *V*.

1. In Triangulo *d b h*,

Dantur	*d b*	10, 00000
	a d b externus	24 |44
	b h d	11 |45
Quær.	*b h*	10, 31894

2. In Triangulo *d b g*,

Dantur	*d b*	10, 00000
	c d b externus	51 |72
	b g d	23 |54
Quær.	*b g*	10, 29347

3. In Triangulo *h b g*,

Dantur	*b h*	10, 31894
	b g	10, 29347
	h b g	41 |17

Quær. *b h g* (vel *bhi*) 64 |95 = *b s g*

Et *h i b* = *s g b* = 90.

Ergo *h b i* = *g b s* = 25 |05

Ex *gbi* = *gbs* + *sbi* (= *hbg* − *hbi*) = 16 |12

Aufer *d b h* = *h b i* — *d b i* = 12 |99

Restat *gbs*+*sbi*—*hbi*+*dbi*=*sbd* (vel *dbl*) 3 |13

4. In Triangulo *g b s*

Dantur	*b g*	10, 29347
	b g s	90
	g b s	25 |05
Quær.	*b s*	10, 33637

5. In Triangulo *d b l*,

Dantur	*b d*	10, 00000
	b l (semis τȣ̃ *b s*)	10, 03534
	d b l	3 |13

Quærit. *b l d* 32 |31 Anom. vera

Et *l d* 9, 00926 Excentricitas.

Nimir. Ut Fig. *II*. B L 9, 69897, ad L I, 8, 67284;
Ita Fig. *V*. *b l* 10, 03534, ad *l d* 9, 00926.

	s.	*g.*	*m.*	*sec.*
Ex loco apparenti secundæ Observationis	5	25	43	0
auferatur angulus Anomaliæ veræ B L I	1	2	18	36
Restat locus Apogéi	4	23	24	24

Erat

Erat autem reverà ævo *Tychonis* Apogeon *Martis* in ♌ $28\frac{1}{2}$ *d.*, à quo deficit iste locus, calculo inventus, solidis quinque gradibus. Porrò,

Ut B L 9,69897, } Ita 5,18290 Log-us 152369 distantiæ med. ♂tis,
ad L I 8,67284; } ad 4,15677 Log-um 14347 Excentricitatis ♂tis.

Est autum vera Excentric. ♂tis 14179, quam ista, calculo inventa, excedit $\frac{168}{14179}$ particulis.

Cæterum in ratiocinio secundùm utramque Methodum instituto notare licet non modò perpetuam Triangulorum similitudinem, sed & Epilogismi congruentiam; ne quis Apogéi & Excentricitatis sic inventæ à vero discrepantiam censeat errori Calculi imputandam. Sed nec Observationum vitio contingit; quas in dubium vocare nil aliud foret, quàm principia in Astronomia negare. Itaque restat, ut Hypothesin excutiamus.

Et *Ellipticæ* quidem Orbitæ Inventio sine controversia *Keplero* debetur; sed quibus Accelerationis & Retardationis gradibus incedant Planetæ, definire, non minùs pertinet ad integrandam Hypothesin, quàm ipsius Orbitæ determinatio. Quanquam autem ex Cl. *Cassini* (vel Interpretis ejus) sermone id nusquam apparet; attamen ex Constructione Problematis, & ejus Analysi, manifestum est, eum supponere, Planetam ex foco superiori videri prorsus æquabili motu incedere. Fuit sanè, cùm idem existimaret *Keplerus*, quod ejus Scripta evolventibus liquere potest. Sed cum id Observationibus nequaquam congruere animadverteret, mutavit sententiam, & lineam veri motûs Planetæ æqualibus temporibus æquales areas Ellipticas verrere professus est: Punctum autem, ex quo Planeta exactè æquabili motu procedere videtur, nullum omninò extare in hoc Universo, nisi id libratile statuere libeat. Nulli interim puncto propriùs æquabilem videri incessum Planetæ, quàm ipsi foco superiori Ellipseos. Neque inventus fuit hactenus, qui areas *Kepleri* phænomenis satisfacere posse negaret; sed, cum eas Calculo directo exhibere nec ipse nec post eum quisquam potuerit, causati sunt nonnulli, *Keplerum*, nimis indulgentem causis *Physicis*, à *Geometria* diversum abiisse; quasi causæ physicæ repugnent Geometriæ, aut minus Geometricum sit Problema, quod, nullâ injectâ physicarum causarum mentione, sic proponitur: *Data area Trilinei, inter lineas absidum, & veri motus, nec non peripheriam Ellipticam intercepti, invenire Angulum ad Solem.* Habent igitur à *Keplero* responsum, qui illi ἀγεωμετρίαν objiciunt; nim. *Eant ipsi & Schema solvant.*

Quamvis autem religio fuerit *Keplero*, ab Hypothesi, quam *Naturalem* esse planè persuasum habebat, recedere; quidni liberum foret aliis periculum facere, num via quævis alia detur, inæqualitatem Planetarum primam directo Calculo investigandi? Ideoque Vir Clariss. *Ism. Bullialdus* aggressus est ratiocinio Geometrico indagare, quâ semitâ, & quibus intensionis ac remissionis gradibus conveniret Planetas ferri, ut ab æquabili incessûs norma, Astronomis ante *Keplerum* assumptâ, ad eam, quam spectamus, Inæqualitatem perduceremur. Perennant Illustrissimi viri monu-

monumenta, unde omnem hujus Inventi rationem haurire licet Astrophilis. Amplexus eandem Reverendiss. *Seth. Wardus*, primùm ostendit, paria facere cum linea æquabilis motûs circa alterum Ellipseos umbilicum gyrata; deinde & Calculi directi methodo ornavit eâ, quam pauló antè recitavimus: Ita ut nil amplius desiderari posset, quàm ut *Urania* felicibus cæptis annueret. Cujus quidem nomine suscipere ausus fuit Illustriss. Comes *Paganus*, edito, *biennio post*, ejusdem ferè tenoris Scripto, adeò veram esse Hypothesin, ut deprehensam circa Octantes discrepantiam, Astronomorum inscitiæ tributam mallet. At Cl. *Bullialdus*, audiendam potiùs ipsam Astronomiam ratus, Observatorum ore loquentem, secundis curis, adhibita prioribus Inventis limitatione quadam, discrepantiam illam exterminavit. Unde porrò intelligitur, Hypothesin illam, cui Cl. *Cassinus* investigationem Apogeorum & Excentricitatum superstruit, tantundem ferè deficere à vero, quantum Cl. *Bullialdi* limitatio pollet, atque ab illo defectu pullulare eum quem suprà notavimus, Calculi à Cœlo dissensum.

Tantùm vero abest, ut de Eximii Viri Inventione vel minimum delibatum velim, ut quicquid hujus lucubratiunculæ non hausi ex Reverendiss. *Wardo*, vel *Herigono*, id omne Ipsi libentissimè acceptum referam, qui ansam nobis præbuit hæc altius considerandi. Nec dubitamus, quin omnia ista multò uberiùs ac luculentiùs in promisso *Tractatu* exposita propediem reperturi simus, cujus Editionem maturam, pro eo quo flagramus divinissimæ Scientiæ amore, perquàm avidè exspectamus.

An Account of Three Books.

I. Esperienze *intorno alla* Generatione Degl' Insetti, *fatte da* Francisco Redi, *Academico della Crusca. In* Firenze, *A.* 1668. *in* 4o.

THe Learned and Ingenious Author of this Book, lately come to the Publishers hands, though not yet (which is much disliked by the curious) into our Stationers Shops, doth with much industry undertake therein to evince, that there is no such thing as *Æquivocal* Generation but that every Animal is generated by the seed of another Animal, (its parent,) or, at least, from some Living and un-corrupted Plant, as out of Oak-Apples, and several Protuberances and Excrescencies of Vegetables.

First then, in the asserting of the *Universal* and true Generation of Insects by a peculiar and paternal Seed, the Author positively affirms, that he could never find, by all the Experiments and Observations, he ever made (of which he relateth a great number, by himself made upon all sorts of Animals) that ever any Insects were bred from Flesh, or Fish, or *putrified* Plants, or any other Bodies, but such, as Flies had access unto, and scatter'd their seed upon; he having taken extraordinary care and pains to observe, that alwayes on the Flesh, before it did verminate, there sate Flies of the self same kind with those, that were afterwards produc'd thence; and again, that no Worms would ever come from any Flesh in Vessels well cover'd, and defended from the access of Flies; so that to him there is no generation of Insects from any dead Animals, but such as have been fly-blown.

And least it should be objected, that the reason, why in vessels exactly clos'd, no Insect breeds, is the want of Air, necessary to all Generation, He hath carefully covered several vessels with very fine Naples-vaile, for the Air to enter, though Flyes could not; but that no worms at all were bred there, notwithstanding that many Flyes swarmed about them, invited by the smel of the Flesh inclosed therein.

Secondly, to make out the other part of his Position, *viz.* That those Animals that are not bred by the seed of other Animals, are produced from some live Plant, or its

Excre-

Fig. II.

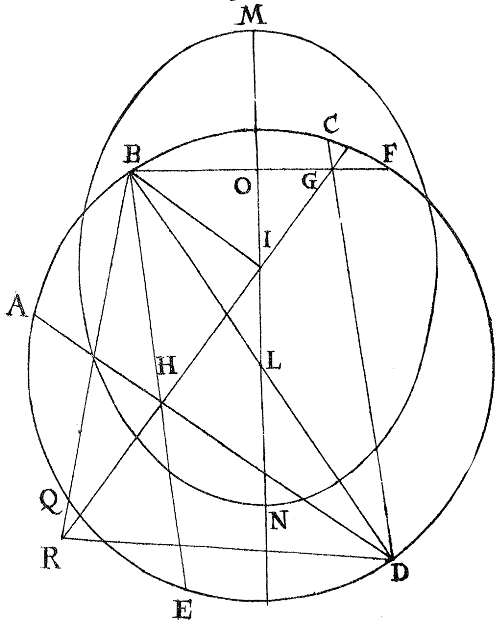

Fig. III.

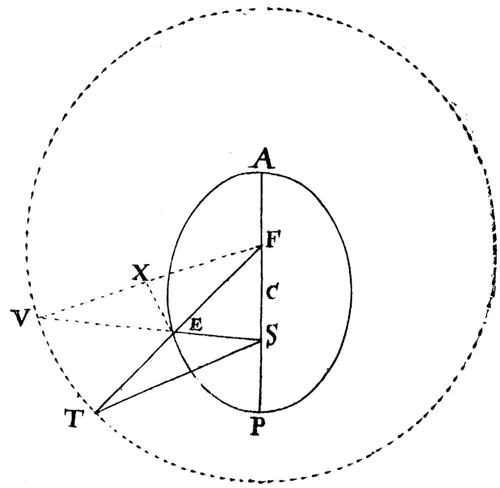

Fig I.

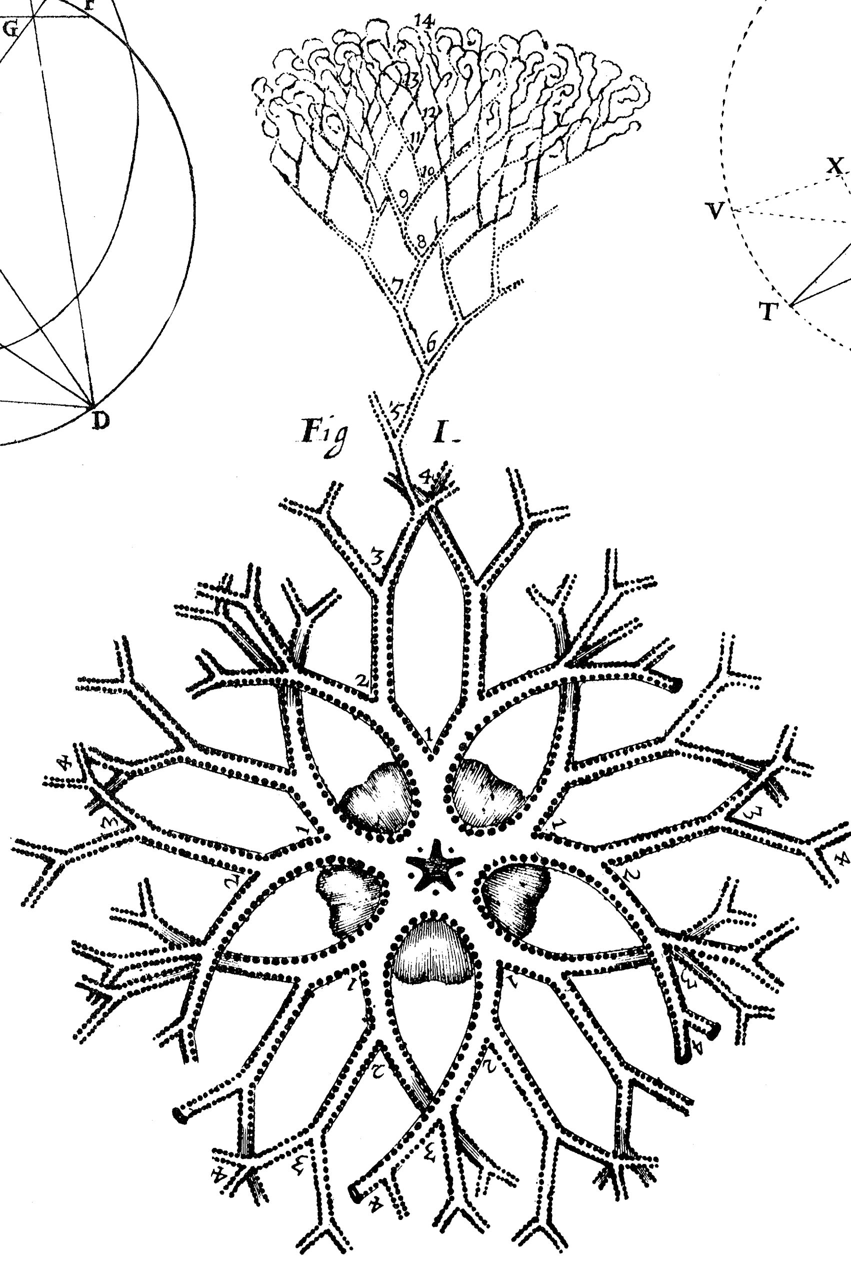

Fig. IV

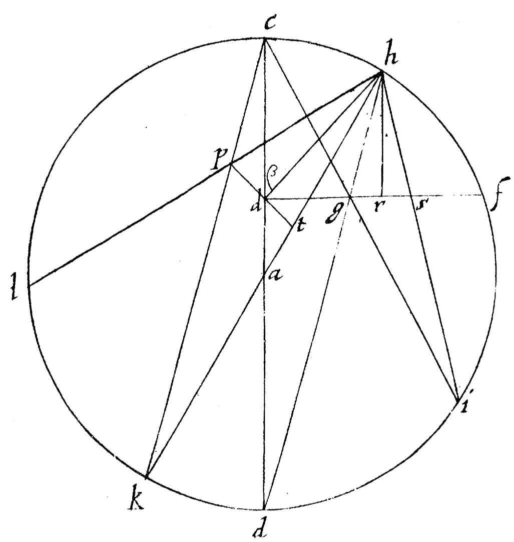

Fig. V.